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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/780,278	02/17/2004	David W. Larsen	2114.68540	7067

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EXAMINER	
NGUYEN, SANG H	

ART UNIT	PAPER NUMBER
2877	

DATE MAILED: 02/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/780,278	LARSEN ET AL.	
	Examiner	Art Unit	
	Sang Nguyen	2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 December 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-38* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,10-12,17-25 and 34-38* is/are rejected.

7)☒ Claim(s) *4-9,13-16 and 26-33* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *06/24/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

The information disclosure statement (IDS) submitted on 06/24/04 has been entered. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Oath/Declaration

The oath/declaration filed on 02/17/04 is acceptable.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 35-38 are rejected under 35 U.S.C. 102(b) as being anticipated by Schildmeyer et al (U.S. Patent No. 5,872,622).

Regarding claim 35; Schildmeyer et al discloses a light scattering detector device, comprising:

a detection cell considered to be a view volume (56 of figure 6) to accept particles (col.6 lines 27-32) suspended in a gas stream (20 of figure 6) and permit a light beam (58 of figure 6) to pass through a trajectory of the particles and gas stream (20 of figure 6 and col.6 lines 27-32);

a sample light detector (62 of figure 6) disposed to detect light scattered in the detection cell (56 of figure 6 and col. 6 lines 36-43);

a light trap (54 o figure 1) that accepts the light beam (58 of figure 1) after it passes through the detection cell (56 of figure 1);

a heated inlet port (90 of figure 8) that extends into said detection cell (56 of figure 8) to control the trajectory of the particles and gas stream (col. 6 lines 36-43); and

a heated exit port (92 of figure 8) that extends into said detection cell (56 of figure 8) to control the trajectory of the particles and gas stream (col. 6 lines 36-43).

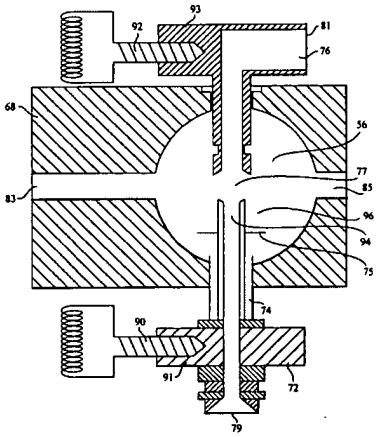


FIG. 8

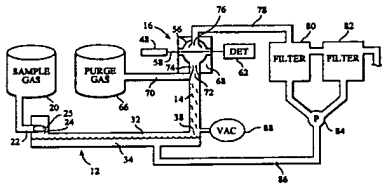


FIG. 6

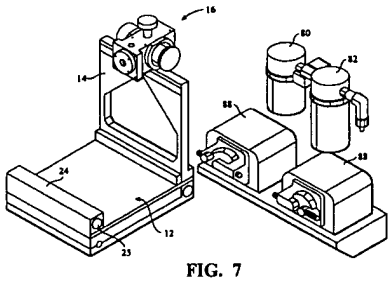


FIG. 7

Regarding claim 36; Schildmeyer et al discloses a first heater (36 of figure 1) to heat said heated inlet port (90 of figure 8) and a second heater (40 of figure 1) to heat said heated exit port (92 of figure 8).

Regarding claim 37; Schildmeyer et al discloses said heated inlet port (90 of figure 8) and said heated exit port (92 of figure 8) are thermally conductive and said detection cell is thermally nonconductive (col.4 lines 10-27).

Regarding claim 38; Schildmeyer et al discloses said heated inlet port (36 of figure 1) and said heated exit port (40 of figure 1) are thermally isolated from said detection cell (56 of figure 1).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-2, 10-12, and 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cerni et al (U.S. Patent No. 6,903,818) in view of Ostwald (D.E 38 41 979 A1).

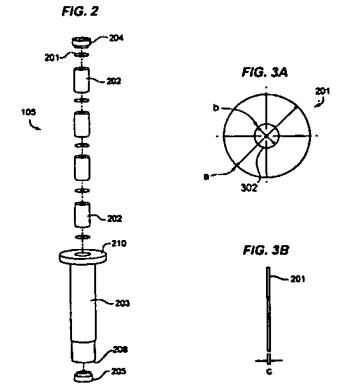
Regarding claim 1; Creni et al discloses a light scattering detector device, comprising:

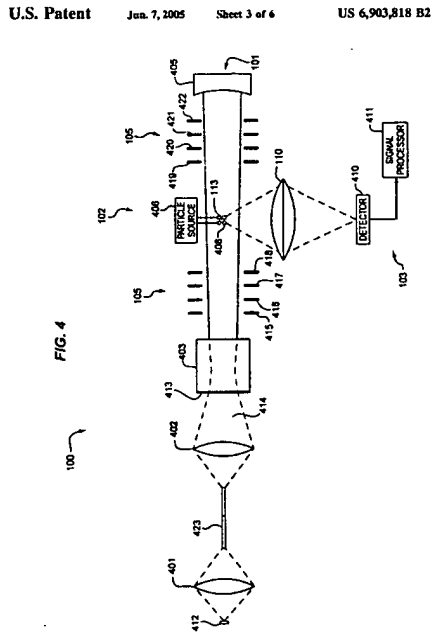
a detection cell (408 of figure 4) to accept particles (figure 4) suspended in a gas stream considered to be a particle source (406 of figure 4) and permit a

light beam (figure 4) to pass through a trajectory of the particles and gas stream (406 of figure 4);

a sample light detector (410 of figure 4) disposed to detect light scattered in the detection cell (408 of figure 4) though a collection optics (110 of figure 4);

a light trap (105 of figures 1-2) that accepts the light beam (figures 1-4) after it passes through the detection cell (408 of figure 4), wherein the light trap (105 of figure 2) having a elongated housing (203 of figure 2) and light trap spacers (202 of figure 2) and a plurality of plates (201 of figure 2) are threaded on the inside of the elongated housing (203 of figure 2) and panted back material (col.7 lines 53-67) the inside of the elongated housing (203 of figure 2). See figure 1-4.





Cerni et al discloses all of features of claimed invention except for an absorptive filter disposed to substantially align the electric field vector of the polarized beam with the plane of incidence defined by the polarized beam and the normal to said absorptive filter, and disposed to intersect the polarized beam at an angle of incidence that approximates Brewster's angle. However, Ostwald teaches that it is known in the art to provide the light trap (abstract and figures 1-3) including a housing (4 of figure 1) through which the polarized beam (2 of figure 1) passes and an absorptive filter (5,7,9,11 of figures 1-3) disposed to substantially align the electric field vector of the polarized beam (2 of figure 3) with the plane of incidence (figure 3) defined by the polarized beam (2 of figure 3) and the normal (figure 3) to said absorptive filter (5 of figure 3), and disposed to intersect the polarized beam (2 of figure 3) at an angle of incidence that approximates Brewster's angle (abstract). See figures 1-3.

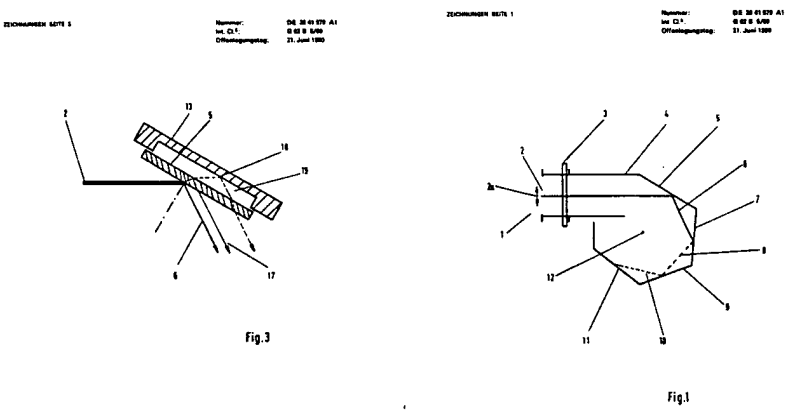


Fig.3

Fig.1

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine light scattering detector device of Cerni et al with an absorptive filter disposed to substantially align the electric field vector of the polarized beam with the plane of incidence defined by the polarized beam and the normal to said absorptive filter, and disposed to intersect the polarized beam at an angle of incidence that approximates Brewster's angle as taught by Ostwald for the purpose of absorption of unwanted light in measurement of scattering light and designing to allow no light to be scattered back out of it (abstract).

Regarding claim 2; Creni et al discloses further comprising a light source (412 of figure 4 and col.8 lines 22-23) to produce the polarized beam, wherein the light source (412 of figure 4) having a high power of polarized laser (col.6 lines 1-19). Cerni et al discloses all of features of claimed invention except for except for the power polarized laser having at least 5 nw. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine light scattering detector device of Cerni et al with the power polarized laser having at least 5 nw, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Regarding claims 10-11; Cerni et al discloses a laser particle counter having a sample compound lens collector considered to be two low f-number detector collection optics (110 of figure 4) to direct light scattered in the detection

cell (408 of figure 4) upon the sample light detector (410 of figure 4), wherein the sample compound lens collector comprises two asphereic lens (110 of figure 4).

Regarding claim 12; Cerni et al discloses a spherical mirror considered to be a mirror (405 of figure 1) to direct light scattered in the detection cell (408 of figure 4) to the compound lens collector (110 of figure 4).

Regarding claim 23-24; Cerni et al discloses all of features of claimed invention except for the electric field vector and the plane of incidence defined by the polarized beam and the normal. However, Ostwald teaches that it is known in the art to provide the light trap (abstract and figures 1-3) including a housing (4 of figure 1) through which the polarized beam (2 of figure 1) passes and an absorptive filter (5,7,9,11 of figures 1-3) disposed to substantially align the electric field vector of the polarized beam (2 of figure 3) with the plane of incidence (figure 3) defined by the polarized beam (2 of figure 3) and the normal (figure 3) to said absorptive filter (5 of figure 3), and disposed to intersect the polarized beam (2 of figure 3) at an angle of incidence that approximates Brewster's angle (abstract). It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine light scattering detector device of Cerni et al with an absorptive filter disposed to substantially align the electric field vector of the polarized beam with the plane of incidence defined by the polarized beam and the normal to said absorptive filter, and disposed to intersect the polarized beam at an angle of incidence that approximates Brewster's angle as taught by Ostwald for the purpose of

absorption of unwanted light in measurement of scattering light and designing to allow no light to be scattered back out of it (abstract).

Cerni et al in view of Ostwald discloses all of features of claimed invention except for absorptive filter align within 2 degrees or less or 1 degree or less. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine light scattering detector device of Cerni et al with absorptive filter align within 2 degrees or less, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cerni et al in view of Ostwald as applied to claim 1 above, and further in view of Musha (U.S. Patent No. 4,725,140).

Regarding claim 3; Cerni et al in view of Ostwald discloses all of features of the claimed invention except for the light source comprises an incoherent source with a polarizer. Musha teaches that it is known in the art to provide the light source (figure 1) comprises an incoherent source (1 of figure 1 and col.7 lines 45-50) with a polarizer (2 of figure 1). It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine light scattering detector device of Cerni et al with the light source comprises an incoherent source with a polarizer as taught by Musha for the purpose of reducing light interference from incoherent.

Claims 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cerni et al in view of Ostwald as applied to claim 1 above, and further in view of Schildmeyer et al (U.S. Patent No. 5,872,622).

Regarding claim 17; Cerni et al in view of Ostwald discloses all of features of claimed invention except for an inlet port that extends into said detection cell to control the trajectory of the particles and gas stream and an exit port that extends into said detection cell to control the trajectory of the particles and gas stream. However, Schildmeyer et al teaches that it is known in the art to an inlet port (72 of figure 6) that extends into said detection cell (56 of figure 6) to control the trajectory of the particles and gas stream (20, 66 of figure 6) and an exit port (76, 81 of figure 6) that extends into said detection cell (56 of figure 6) to control the trajectory of the particles and gas stream (20, 66 of figure 1). It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine light scattering detector device of Cerni et al with an inlet port that extends into said detection cell to control the trajectory of the particles and gas stream and an exit port that extends into said detection cell to control the trajectory of the particles and gas stream as taught by Schildmeyer et al for the purpose of working fluid does not contaminate the ambient environment where the sampler is located such as a production facility (col.8 lines 7-9)

Regarding claims 18-20; Cerni et al in view of Ostwald discloses all of features of claimed invention except for means to heat said inlet port and said exit port, wherein said detection cell is thermally isolated from said exit port and said inlet port. wherein said detection cell is thermally nonconductive so that it is

thermally isolated from said exit port and said inlet port, and wherein said detection cell is insulated from said exit port and said inlet port so that it is thermally isolated from said exit port and said inlet port. However, Schildmeyer et al teaches that it is known in the art to a heated inlet port (90 of figure 8) that extends into said detection cell (56 of figure 8) to control the trajectory of the particles and gas stream (col. 6 lines 36-43) and a heated exit port (92 of figure 8) that extends into said detection cell (56 of figure 8) to control the trajectory of the particles and gas stream (col. 6 lines 36-43), wherein said heated inlet port (90 of figure 8) and said heated exit port (92 of figure 8) are thermally conductive and said detection cell is thermally nonconductive (col.4 lines 10-27), wherein said heated inlet port (36 of figure 1) and said heated exit port (40 of figure 1) are thermally isolated from said detection cell (56 of figure 1). It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine light scattering detector device of Cerni et al with means to heat said inlet port and said exit port, wherein said detection cell is thermally isolated from said exit port and said inlet port. wherein said detection cell is thermally nonconductive so that it is thermally isolated from said exit port and said inlet port, and wherein said detection cell is insulated from said exit port and said inlet port so that it is thermally isolated from said exit port and said inlet port as taught by Schildmeyer et al for the purpose of preventing condensation of vapor on the flow surfaces of the optics block (col.7 lines 40-41) and operating to maintain the temperature of vapor within a predetermined range (col.4 lines 16-17).

Claims 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cerni et al in view of Ostwald as applied to claim 1 above, and further in view of Wyatt (U.S. Patent No. 6,490,530).

Regarding claims 21-22; Cerni et al in view of Ostwald discloses all of features of claimed invention except for said absorptive filter comprises an absorptive neutral density filter or an absorptive band pass filter having a pass band set to mismatch the band of the polarized beam.. However, Wyatt teaches that it is known in the art to provide absorptive filter comprises an absorptive neutral density filter (col.6 lines 44-51) or an absorptive band pass filter having a pass band set to mismatch the band of the polarized beam (col.14 lines 14-18 and claim 10). It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine light scattering detector device of Cerni et al with said absorptive filter comprises an absorptive neutral density filter or an absorptive band pass filter having a pass band set to mismatch the band of the polarized beam as taught by Wyatt for the purpose of filtering or reducing light interference of the light source.

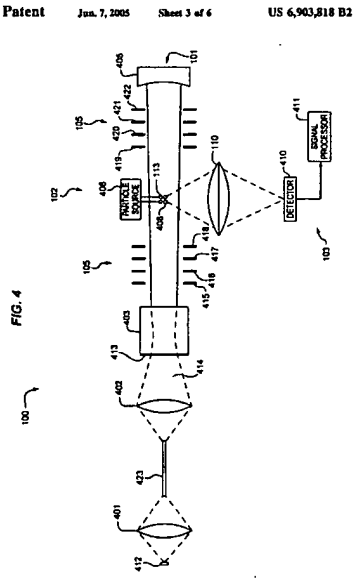
Claims 25 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prior Art of Present Invention (figure 1) in view of Cerni et al (U.S. Patent No. 6,903,818).

Regarding claim 25; PAPI discloses a light scattering detector device, comprising:

a detection cell (104 of figure 1) to accept particles (106 of figure 1) suspended in a gas stream (page 1 in paragraph 4) and permit a light beam (102 of figure 1) to pass through a trajectory of the particles (106 of figure 1) and gas stream (page 1 in paragraph 4);

a sample light detector (109 of figure 1) disposed to detect light scattered in the detection cell (104 of figure 1) though a focus lens (108 of figure 1);

a light trap (105 of figure 1) that accepts the light beam (111 of figure 1) after it passes through the detection cell (104 of figure 1). See figure 1.



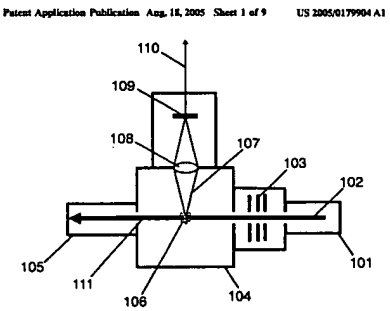


FIG. 1
(Prior Art)

PAPI discloses all of features of claimed invention except for a sample compound lens collector to direct light scattered in the detection cell upon the sample light detector and a spherical mirror to direct light scattered in the detection cell to the compound lens collector. However, Cerni et al teaches that it is known in the art to provide a laser particle counter having a sample compound

lens collector considered to be two low f-number detector collection optics (110 of figure 4) to direct light scattered in the detection cell (408 of figure 4) upon the sample light detector (410 of figure 4) and a spherical mirror considered to be a mirror (405 of figure 1) to direct light scattered in the detection cell (408 of figure 4) to the compound lens collector (110 of figure 4). See figures 1 and 4.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine light scattering detector device of PAPI with a sample compound lens collector to direct light scattered in the detection cell upon the sample light detector and a spherical mirror to direct light scattered in the detection cell to the compound lens collector as taught by Cerni et al for the purpose of reducing or minimizing flow-induced laser power noise, airflow though the laser beam should be laminar ((col.6 lines 20-21).

Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over PAPI in view of Cerni et al as applied to claim 25 above, and further in view of Schildmeyer et al (U.S. Patent No. 5,872,622).

Regarding claim 34; PAPI discloses all of features of claimed invention except for an inlet port that extends into said detection cell to control the trajectory of the particles and gas stream, and an exit port that extends into said detection cell to control the trajectory of the particles and gas stream. However, Schildmeyer et al teaches that it is known in the art to provide a heated inlet port (90 of figure 8) that extends into said detection cell (56 of figure 8) to control the trajectory of the particles and gas stream (col. 6 lines 36-43), and a heated exit port (92 of figure 8) that extends into said detection cell (56 of figure 8) to control

the trajectory of the particles and gas stream (col. 6 lines 36-43). It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine light scattering detector device of PAPI with an inlet port that extends into said detection cell to control the trajectory of the particles and gas stream, and an exit port that extends into said detection cell to control the trajectory of the particles and gas stream as taught by Schildmeyer et al for the purpose of preveting condensation of vapor on the flow surfaces of the optics block (col.7 lines 40-41).

Allowable Subject Matter

Claims 4-9, 13-14, 15-16, and 26-33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As to independent claim 4 is allowable over the prior art for at least the reason that the prior art of record, taken alone or in combination, fails discloses or render obvious a light scattering detector device comprising all the specific elements with the specific combination including of a reference light detector to detect light passing through said absorptive filter, and a noise cancellation circuit to sum a reference signal corresponding to light received by said reference light detector and a sample signal corresponding to light received by said sample light detector, the noise cancellation circuit further comprising one or more potentiometers that may be adjusted to balance said reference signal and said sample signal in set forth of claim 4.

As to independent claim 13 is allowable over the prior art for at least the reason that the prior art of record, taken alone or in combination, fails discloses or render obvious a light scattering detector device comprising all the specific elements with the specific combination including of a reference cell through which the polarized beam passes before the polarized beam is accepted by said light trap; a reference light detector; a reference cell compound lens collector to direct light scattered in the reference cell upon the reference light detector; a spherical mirror to direct light scattered in the reference cell to the reference cell compound lens collector in set forth of claim 13.

As to independent claim 15 is allowable over the prior art for at least the reason that the prior art of record, taken alone or in combination, fails discloses or render obvious a light scattering detector device comprising all the specific elements with the specific combination including of a reference cell through which the polarized beam passes before the polarized beam is accepted by said light trap; a reference light detector; and a reference cell compound lens collector to direct light scattered in the reference cell upon the reference light detector in set forth of claim 15.

As to independent claim 26 is allowable over the prior art for at least the reason that the prior art of record, taken alone or in combination, fails discloses or render obvious a light scattering detector device comprising all the specific elements with the specific combination including of a reference cell through which the light beam passes before the light beam is accepted by said light trap, a reference light detector, a reference cell compound lens collector to direct light

scattered in the reference cell upon the reference light detector, and a spherical mirror to direct light scattered in the reference cell to the reference cell compound lens collector in set forth of claim 26.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ahn et al (6980284) discloses condensation particle counter; Johnson (6414754) discloses method and apparatus for suspending stray light in particle detectors; Knox et al (6184537) discloses detection of airborne pollutants; Paoli et al (5872361) discloses turbidmeter with non-imaging optical concentration; Blades (4343552) discloses nephelometer; Wallace (4178103) discloses light scattering photometer and sample handling system; McCuney (4053229) discloses laboratory scattering photometer; Sigrist (3869209) discloses apparatus for determining the amount of the dispersed phase in a suspension; or C.D. Weston et al (3462608) discloses method and apparatus for detecting suspended particles.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sang Nguyen whose telephone number is (571) 272-2425. The examiner can normally be reached on 9:30 am to 7:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr. can be reached on (571) 272-2800 ext. 77. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

February 8, 2006

SN

Patent Examiner
Sang Nguyen
Art Unit 2877